

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1.(Currently Amended) A self-oxidation internal heating steam reforming system ~~being structured~~ constructed so as to conduct self-oxidation of a raw material gas under the presence of oxygen and conduct steam reforming to generate a hydrogen-rich reformed gas, the self-oxidation internal heating steam reforming system comprising:

a steam generator [[2]] comprising a combustion section ~~2a to combust for~~ combusting an air-fuel mixture obtained by mixing a combustion air with a fuel, thereby heating water by a combustion gas generated in the combustion section [[2a]] to generate steam;

a first sucking mixer [[4]] for sucking the raw material gas into a steam stream coming from the steam generator [[2]] to obtain a raw material-steam mixture; and

a reformer [[1]] for oxidizing the raw material gas ~~contained~~ in the raw material-steam mixture by an oxygen-containing gas supplied externally, thereby conducting steam reforming of the raw material gas using a reaction heat of the oxidation to generate a hydrogen-rich reformed gas.

2.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein a second sucking mixer [[6]] for sucking the fuel into the combustion air is disposed in order to obtain the air-fuel mixture.

3.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein a CO reducer [[3]] for oxidizing and reducing carbon monoxide contained in the reformed gas generated in the reformer [[1]] is disposed.

4.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, comprising a heat exchanger [[13]] for preheating or heating at least one of the fuel, the raw material gas, and other heating medium using a combustion flue gas discharged from the combustion section [[2a]].

5.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein at least one of heat exchangers ~~(12, 12a, 15, 16, and 17)~~ for preheating at least one of the combustion air, the fuel, water for generating steam, the oxygen-containing gas for oxidization, and the raw material-steam mixture using the reformed gas discharged from the reformer [[1]] is disposed.

6.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 5, wherein at least one of the heat exchangers (12, 12a, 15, 16, and 17) is located to a reformed gas conduit at the downstream side of the CO reducer [[3]].

7.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein the system is constructed such that, when a surplus occurs for the steam generated from the steam generator [[2]], at least a part of the surplus steam is used to heat other heating medium.

8.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 7, wherein the system is constructed such that the heating medium is water held in a hot-water tank [[27]] in which a main hot-water chamber [[27a]] and an auxiliary chamber [[27b]] are vertically communicated with each other, and that the surplus steam is supplied to the water in the auxiliary chamber [[27b]].

9.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein the system is constructed such that the reformed gas is supplied to a fuel cell [[300]].

10.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 9, wherein the system is constructed such that an anode flue gas coming from the fuel cell [[300]] is supplied as a fuel to the combustion section [[2a]].

11.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 10, wherein the system is constructed so as to comprise a mixing section [[116b]] for mixing at least a part of the surplus steam to the anode flue gas of the fuel cell [[300]]; a heat exchanger [[19]] for dewatering a mixture obtained in the mixing section [[116b]] by cooling the mixture using other heating medium to condense moisture; and a heat exchanger [[18]] for reheating the dewatered mixture using the mixture entered the mixing section [[116b]]; thereby supplying the mixture coming from the heat exchanger [[18]] for reheating as a fuel for the combustion section [[2a]].

12.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 1, wherein:

the reformer [[1]] comprises a first reaction chamber [[61a]] and a second reaction chamber [[62a]] separated from each other by a heat-conductive partition wall [[62b]];

the first reaction chamber [[61a]] is provided with a raw material feed section [[68]] for supplying the raw material-steam mixture at one end and a discharge section [[68a]] at the other end respectively, while packing a steam reforming catalyst bed [[71a]] therein; and

the second reaction chamber [[62a]] is provided with a raw material feed section [[69a]] and an oxygen-containing gas introduction section [[63]] communicating with the discharge section [[68a]] of the first reaction chamber [[61a]] at one end and a discharge section [[69]] at the other end respectively, where the inside of the second reaction chamber [[62a]] is packed sequentially with a mixed catalyst bed [[72a]] prepared by mixing a steam reforming catalyst with an oxidation catalyst at the raw material feed section [[69a]] side, a heat-transfer particle bed [[72b]] at the middle section, and a shift catalyst bed [[72e]] at the discharge section [[69]] side.

13.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 12, wherein the first reaction chamber 61a is packed with a heat-transfer particle bed [[71b]] at the raw material feed section [[68]] side, a steam reforming catalyst bed [[71a]] at the discharge section [[68a]] side, while making the heat transfer particle bed [[71b]] in the first reaction chamber [[61a]], the heat transfer particle bed [[72b]] in the second reaction chamber [[62a]], and the shift

catalyst bed [[72e]] face with each other via the respective partition walls [[62b]].

14.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 12, wherein the plurality of partition walls [[62b]] have fixed ends joining with each other at respective edge sections at the raw material feed section [[68]] and the discharge section [[69]], while having free ends not having been joined with each other at the opposite end sections.

15.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 12, wherein the reformer [[1]], the steam generator [[2]], and the first sucking mixer [[4]] are integrated to form a package structure.

16.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 15, wherein the package structure further comprises a heat exchanger [[12]] for preheating the oxygen-containing gas for oxidation being supplied to the reformer [[1]] and/or preheating the combustion air being supplied to the steam generator [[2]].

17. - 23.(Canceled)

24.(Currently Amended) The self-oxidation internal heating steam reforming system as in claim 27, wherein the system is constructed such that;

the reformer [[1]] comprises a first reaction chamber [[61a]] and a second reaction chamber [[62a]] separated from each other by a heat-conductive partition wall [[62b]];

the first reaction chamber [[61a]] is provided with a raw material feed section [[68]] for supplying the raw material-steam mixture at one end and a discharge section [[68a]] on the other end respectively, while packing a steam reforming catalyst bed [[71a]] therein; and

the second reaction chamber [[62a]] is provided with a raw material feed section [[69a]] and an oxygen-containing gas introduction section [[63]] communicating the discharge section [[68a]] of the first reaction chamber [[61a]] at one end, and a discharge section [[69]] at the other end respectively, where the inside of the second reaction chamber [[62a]] is packed sequentially with a mixed catalyst bed [[72a]] prepared by mixing a steam reforming catalyst with an oxidation catalyst at the raw material feed section [[69a]] side, a heat-transfer particle bed [[72b]] at the middle section, and a shift catalyst bed [[72e]] at the discharge section side.

25.(Canceled)

26.(New) The self-oxidation internal heating steam reforming system as in claim 1, wherein:

the reformed gas is supplied to a fuel cell; and
a recycler for supplying at least a part of an anode flue gas discharged from the fuel cell as the raw material gas is disposed.

27.(New) The self-oxidation internal heating steam reforming system as in claim 1, wherein:

the reformed gas is supplied to a fuel cell, and an anode flue gas discharged from the fuel cell is supplied as the fuel of the steam generator and/or the raw material gas;

the reformer comprises at least a mixed catalyst bed containing a mixture of a steam reforming catalyst and an oxidation catalyst, and a shift catalyst bed; and
the shift catalyst bed is disposed with a heat exchanger therein for preheating the anode flue gas discharged from the fuel cell.